

REMARKS

This paper is in response to an Office Action mailed January 26, 2005. The Examiner has rejected Claims 1-10 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,298,180 B1, issued to Ho.

The Examiner has also objected to the Drawings in the current Office Action. The specifics of the Drawings objection along with the Applicants' response are discussed below.

Additional Claims 11-15 have been added for the Examiner's consideration. Each of the additional claims is dependent upon independent Claim 1.

Drawings Objection

The Examiner maintains the Drawings submitted with the instant application fail to illustrate every feature of the invention set forth in the claims. In particular, the Examiner asserts the "absorption regions in both the input and output ports" are not illustrated in the Drawings. Moreover, the Examiner indicates the Drawings must illustrate how an "input can double as [an] output."

Regarding the "absorption regions," the specification of the instant application discusses in detail the presence of absorption regions 34. These absorption regions 34 are part of set ports 321 and 322. (See page 4, first 6 lines of the specification; and **Fig. 2**.) The specification further discusses that the input/output ports are combined. The specification teaches that "the set port 321 doubles as the inverting output port 332 and the reset port 322 doubles as the non-inverting output port 331. (See page 8, second full paragraph of the specification; and **Fig. 6**.)

In view of the foregoing, Applicants respectfully submit corrections to the Drawings are not required. Once the Examiner reviews the sections referenced in the previous paragraph, it will be clear the Drawings illustrate at least the subject matter set forth in the claims. Therefore, reconsideration and withdrawal of the Drawing objection are respectfully requested.

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35 U.S.C. §§ 102(b) Rejection

It is a well-settled axiom of patent law that in order to anticipate a claim, a reference must teach each and every element of that claim. Each and every element of a claim must either be expressly or inherently described in a prior art reference.¹ Thus, if every element of the claim is not described by the reference, the claim cannot be rejected under 35 U.S.C. § 102(b) as being anticipated by the prior art. In the current Office Action, the Examiner has rejected Claims 1-10 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,298,180 B1, issued to Ho. The rejection is respectfully traversed.

According to the independent claims of the present invention (Claims 1 and 10), input and output ports are connected to an "multi-mode interference portion," where "a set pulse from one or more input ports and a reset pulse from (a) remaining input port(s) is inputted to the multi-mode interference portion." Light is output from the "multi-mode interference portion" based "on the set pulse and the reset pulse." Furthermore, both Claims 1 and 10 set for the use of "a semiconductor laser" that is part of an "all-optical flip-flop." The language of the various independent claims of the present invention varies somewhat, but the general recitation indicated in the foregoing is accurate.

In the current Office Action, the Examiner states that Ho teaches "a waveguide 400 wherein the waveguide portion is equipped with a multi-mode interference portion." The Examiner specifically points to reference numeral 508 of Fig. 6A as being the "multi-mode interference portion." See in particular pages 3 of the current Office Action for the specifics of the Examiner's comments regarding the independent claims.

Review of the Ho patent reveals that reference numeral 508 is actually an "active medium." (See column 17, lines 45-62.) The active medium 508 is an integral part of a

¹ *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987).

Waveguide A 502. The active medium 508 is designed to excite pulsed light that enters an input port 510 of the Waveguide A 502. (See column 17, lines 54-56.) As is illustrated in Fig 6A of the Ho patent, the Waveguide A 502 only includes one input (input port 510). Moreover, the active medium 508 is not a multi-mode interference portion; those of ordinary skill in the art appreciate active regions do not operate in the same manner as interference portions.

In summary, the Ho patent fails to teach or suggest structure that includes a multi-mode interference portion that includes a plurality of input ports for receiving a set pulse and a reset pulse. Moreover, the Ho patent fails to teach or suggest a multi-mode interference portion that is capable of outputting light based on a set pulse and a reset pulse received by input ports of the interference portion. Ho does not even suggest the use of a set pulse and/or a reset pulse. Still further, Ho fails to teach or suggest the use of a semiconductor laser in conjunction with an all-optical flip-flop.

Accordingly, Applicants respectfully submit that independent Claims 1 and 10 are neither taught nor suggested by the disclosure of Ho. Therefore, Applicants respectfully submit that the rejection under 35 U.S.C. § 102(b) is improper, and therefore respectfully request that the rejection be withdrawn. The remaining rejected dependent claims and added additional dependent claims are at least allowable due to their dependence upon an allowable independent claim. Therefore, reconsideration and withdrawal of the rejection of these claims are also requested.

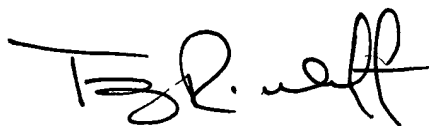
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CONCLUSION

In view of the foregoing remarks, Applicants respectfully submit that the present application is in condition for allowance. Reconsideration and reexamination of the application and allowance of the claims at an early date is solicited. If the Examiner has any questions or comments concerning this matter, the Examiner is invited to contact the undersigned at the number provided below.

Respectfully submitted,

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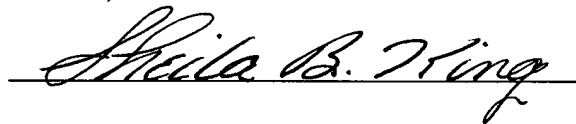


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